lil 99711-3

[redacted]

August 16, 1966
Ref: 357/PLI-82

U. S. Government
Washington, D. C.

Reference: Contract for the Contact Duplicating and Reseau Printer and the High Resolution Stop and Repeat Contact Printer

Subject: Request for Additional Payments

Gentlemen:

This is to request permission to bill up to 80 per cent of Contract price for Printer Number 1, the Contact Duplicating and Reseau Printer, and to bill up to 95 per cent for Printer Number 2, the High Resolution Step and Repeat Contact Printer.

Considering the lengthy delay in resolving the stop work order on Printer Number 2 and the state of completion of Printer Number 1, I believe the request is reasonable.

A summary of the invoices and payments is attached to this document.

Your agreement to pay an additional [redacted] will be appreciated.

STAT

Yours truly,

[redacted]

STAT

TKL:ks

Enc.

Declass Review by NGA.

[redacted]

STAT

Next 1 Page(s) In Document Exempt

Approved For Release 2005/05/20 : CIA-RDP78B04770A001600010004-1

Proj. #997113
8 Mar 65
R.P.D.

[redacted]

February 24, 1965

STAT

[redacted]
Washington, D. C. 20024

Dear Russ:

Enclosed are some comments which I promised to send you, regarding the effects of the MIL-I-11748 RFI specification upon the design of the High Resolution Step and Repeat Printer.

I believe you will observe that, aside from the aesthetic effects upon the external cabinet and the control panel, profound limitations are imposed upon circuit design and the selection of components that detract from the prime effort of providing a printer capable of the highest photographic performance coupled with the highest standards of human factors.

A great deal of time and effort have been expended in an attempt to design to MIL-I-11748. We are presently at the point of ordering components, and I want you to be aware of the effects before we get too far downstream.

I am not sure if you are aware that GIMRADA has just reduced the RFI requirements for Printer 1 (the Reseau Printer) to the extent that only line filters are now required. We will still take the necessary precautions to keep RFI at a satisfactory level for safe, reliable operation. This same level of effort should be quite adequate for the High Resolution Printer.

Included also are the levels of RFI produced by any ambient fluorescent lamps that you may be considering for the clean room.

[redacted]

[redacted]

Obviously, the use of this form of lighting may defeat the concept of RFI control being imposed upon the Printer.

I would again recommend that you review the RFI requirements with your technical people in view of these considerations. If there are any questions or if any additional information is needed, don't hesitate to call.

Very truly yours,

[redacted] STAT

Engineering Leader
Contract Engineering Department

HLB:nw
Enclosure

COMMENTS ON THE RFI REQUIREMENT

ON

THE HIGH RESOLUTION STEP AND REPEAT CONTACT PRINTER

Having to design the Printer to meet the requirements of MIL-I-11748B, Class IIIb, imposes limitations on the designers that can become severe. Following is a tabulation of some of the items that tend to limit, restrict, or constrain the design due to RFI considerations.

1. Selection of an Exposure Source

   Light sources that utilize electric arcs are particularly rich sources of RFI. Mercury arc and other types of arcing sources cannot be considered for this reason.

   Light sources that ionize are also sources of RFI. Neon, argon, and xenon sources are examples of ionizing sources that emit RFI.

   Fluorescent lighting and the associated circuitry are also an RFI problem. Suppression techniques can be used to reduce the RFI from certain types of fluorescents, however.

2. Selection of Lubricants

   Conductive lubricants must be used in motors and other shielded subassemblies that have shafts protruding through bearings. Otherwise, RFI will "leak" through around the shaft.

3. Components that Function as RFI Suppressors

   MIL-I-11748B limits the components used as suppression devices to those that are on the Signal Corps approved listing. If it is necessary to use newer devices or components not on this list, the device must be submitted (in quantity) to the Signal Corps for testing and approval.

4. Selection of Control Panel Components

   Displays and indicators that ionize, such as neons or "Nixies" must be avoided for the same reason that they are avoided as exposure light sources.

4. (Continued)

Transparent coverings on the control panel are limited to the brownish "Nesa" glass or to the Meter screened plexiglas.

A rather narrow selection of screened, illuminated pushbuttons are available. These switches are large and, when used in quantity, the control panel tends to become large and out of proportion. Usually a three or four pound force is necessary to activate the switch.

5. Selection of Electrical Devices

The following electrical devices must be avoided:

a. Silicon controlled rectifiers
b. Magnetic amplifiers
c. Motors with brushes
d. Unsealed motors
e. Unshielded relays
f. Unshielded transformers.

The effect is to limit the selection of techniques and components that the electrical designers can consider. One example would be a transformer. After searching for a transformer with the required characteristics, it may not be available in a shielded version. Then a circuit change, a special order, or a functional compromise would be necessary.

6. Limitations on Cabinetry

a. Continuity must be maintained. This may mean grounding straps between discontinuous mating panels, serrated spring joints, use of only conductive surface finishes, screws spaced no more than two inches apart, etc. These things detract aesthetically from the machine. Another item that detracts in this manner is the use of only conductive glass (brown tinted) in viewing windows, or screened plexiglass.

b. Shielded subassemblies limit the flow of cooling air and create hot spots. This calls for additional blowers and fans which make the machine larger.

COMMENTS ON RFI EMISSION

FROM

FLUORESCENT LIGHTING AND OTHER SOURCES

1. Special installations of RFI shielded and suppressed fluorescent lights are available. These installations tend to be expensive; consequently, other lighting systems are generally used when RFI is a problem.

2. Fluorescent lights emit pulsed RFI at 120 cycles per second. Measurements were made in a room approximately 15 ft. x 20 ft., adequately illuminated for laboratory use, and equipped with fluorescent lights. The following levels were recorded at table-top level.

   100 db at 150 kilocycles
   66 db at 10 megacycles

   A small fluorescent desk lamp peaked at 3.5 megacycles. The RFI level in the room was also influenced by the density of the lights.

   MIL-I-11748B limits RFI to:

   66 db at 140 kilocycles
   50 db at 10 megacycles

3. Many other items emit RFI. One of the choice examples is an electric typewriter. Motors on air conditioners and water coolers also are RFI sources. Dialing a telephone causes RFI. Even flicking a wall switch in a room to turn on the lights causes an RFI pulse to be generated.